REMARKS

In the Office Action dated September 21, 2005, the Examiner objected to claims 1, 3-5, 11, 13-15, 19, 21-23, 29 and 31-33 as containing informalities. The Examiner further rejected claims 3-5, 13-15, 21-23 and 31-33 under 35 U.S.C. §112, first paragraph, as allegedly failing to comply with the written description requirement. The Examiner further rejected claims 1-36 under 35 U.S.C. §112, second paragraph, as allegedly being indefinite. The Examiner additionally rejected claims 1-9, 11-17, 19-27 and 29-35 under 35 U.S.C. § 102(b) as allegedly being anticipated by U.S. Patent Application Publication No. 2002/0159513 (hereinafter "WILLIAMS"). The Examiner further rejected claims 10, 18, 28 and 36 under 35 U.S.C. § 103(a) as allegedly being unpatentable over WILLIAMS in view of U.S. Patent No. 5,960,000 (hereinafter "RUSZCZYK").

By way of the present amendment, Applicant cancels claims 1-10 and 12-36 without prejudice or disclaimer. Applicant further has amended claim 11 to improve form and added new claims 37-52. No new matter has been added by the present amendment. Reconsideration of the outstanding rejection of claims 1-36 is respectfully requested in view of the amendments above and the following remarks.

In paragraph 1, the Office Action objects to claims 1, 3-5, 11, 13-15, 19, 21-23, 29 and 31-33 as containing informalities. Claims 1, 3-5, 13-15, 19, 21-23, 29 and 31-33 have been canceled, therefore, the objection of these claims now stands moot. Claim 11 has further been amended to remove the language "transmission area." In view of this amendment, withdrawal of the objection to claim 11 is respectfully requested.

In paragraph 2, the Office Action rejects claims 3-5, 13-15, 21-23 and 31-33 under 35 U.S.C. §112, first paragraph, as allegedly failing to comply with the written description requirement. These claims have been canceled by the present amendment, therefore, the rejection of these claims now stands moot. Withdrawal of the rejection of claims 3-5, 13-15, 21-23 and 31-33 under 35 U.S.C. §112, first paragraph, is, thus, respectfully requested.

In paragraph 4, the Office Action rejects claims 1-36 under 35 U.S.C. §112, second paragraph, as allegedly being indefinite. Claims 1-10 and 12-36 have been canceled, therefore, the rejection of these claims is moot. Pending claim 11 has been amended to correct the various antecedent basis problems noted by the Office Action in paragraph 4. In view of the amendment to claim 11, withdrawal of the rejection of claim 11 under 35 U.S.C. §112, second paragraph, is respectfully requested.

In paragraph 6, the Office Action rejects claims 1-9, 11-17, 19-27 and 29-35 under 35 U.S.C. § 102(b) as allegedly being anticipated by WILLIAMS. Claims 1-9, 12-17, 19-27 and 29-35 have canceled by the present amendment, therefore, the rejection of these claims is moot. Applicant respectfully traverses the rejection of claim 11, as amended.

Independent claim 11, as amended, recites a "method of scheduling cable in a broadband communications system" that includes "receiving bandwidth allocation requests from the cable modems," "converting each of the bandwidth allocation requests into a mini-slot size based on a modulation and symbol rate associated with the bandwidth allocation requests" and "scheduling transmission on a physical upstream channel from cable modems

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associated with each of the bandwidth allocation requests based on a respective mini-slot

size."

A proper rejection under 35 U.S.C. § 102 requires that a reference teach every aspect

of the claimed invention. See M.P.E.P. § 2131. WILLIAMS does not disclose or suggest the

combination of features recited in Applicant's amended claim 11.

For example, WILLIAMS does not disclose or suggest "converting each of the

bandwidth allocation requests into a mini-slot size based on a modulation and symbol rate

associated with the bandwidth allocation requests" and "scheduling transmission on a

physical upstream channel from cable modems associated with each of the bandwidth

allocation requests based on a respective mini-slot size," as recited in amended claim 11. In

rejecting claim 11, the Office Action relies on paragraphs [0006], [0007], [0008] and [0009]

and lines 3-10 of paragraph [0038]. Applicant submits that these sections of WILLIAMS do

not disclose or suggest the features recited in amended claim 11.

Paragraph [0006] of WILLIAMS discloses:

> The present invention overcomes the disadvantages and limitations of the prior
> art by providing a system and method wherein a plurality of modems, or other
> end user equipment, may transmit upstream data simultaneously in one or
> more timeslots within the frequency range of a single CMTS channel.
> Advantageously, the method of the invention provides higher system
> bandwidth utilization and lower latency without requiring changes to end user
> equipment and which is backward compatible with existing end user
> equipment. End user equipment may comprise modems, set top boxes, or any
> other systems capable of transmitting data upstream on a cable channel.

This section of WILLIAMS, thus, discloses that multiple modems can transmit upstream data

simultaneously in one or more timeslots of a single upstream channel. This section of

WILLIAMS, however, does not disclose, or even suggest, converting each of the bandwidth

allocation requests into a mini-slot size based on a modulation and symbol rate associated

with the bandwidth allocation requests" and "scheduling transmission on a physical upstream

channel from cable modems associated with each of the bandwidth allocation requests based

on a respective mini-slot size," as recited in amended claim 11.

Paragraph [0007] of WILLIAMS discloses:

> The present invention therefore may comprise a method of transferring data
> from a plurality of modems upstream in a cable network in timeslots having a
> predetermined maximum bandwidth comprising: receiving requests to transmit
> said data from the plurality of modems on a cable modem termination system
> that includes information relating to operational parameters of the plurality of
> modems, required bandwidth of the transmission and priority data, selecting
> channels and sub-channels for the plurality of modems based upon the
> operational parameters of the plurality of modems by the required bandwidth
> and the priority data, and assigning the channels and sub-channels by assigning
> center frequencies and bandwidth for each of the modems in the timeslots.

This section of WILLIAMS, thus, discloses the assignment of center frequencies and

bandwidths for each of multiple modems for transmission on the upstream. This section of

WILLIAMS, however, does not disclose or suggest "converting each of the bandwidth

allocation requests into a mini-slot size based on a modulation and symbol rate associated

with the bandwidth allocation requests" and "scheduling transmission on a physical upstream

channel from cable modems associated with each of the bandwidth allocation requests based

on a respective mini-slot size," as recited in amended claim 11.

Paragraph [0008] of WILLIAMS discloses:

> The present invention therefore may also comprise a method of transferring
> data upstream over a cable network comprising: configuring a first cable
> modem to transmit at a first carrier frequency providing a first bandwidth
> during at least one timeslot, configuring a second cable modem to transmit at a
> second carrier frequency and at a second bandwidth during the timeslot
> wherein the first bandwidth is not equal to the second bandwidth, and the first
> and second carrier frequencies are within a single channel of the cable

network, transmitting first data from the first modem at the first carrier frequency during the timeslot, and transmitting second data from the second modem at the second carrier frequency during the timeslot.

This section of WILLIAMS, thus, discloses a first cable modem transmitting at a first carrier frequency and at a first bandwidth during a timeslot, and a second cable modem transmitting at a second carrier frequency and at a second bandwidth during the same timeslot, when the first bandwidth is not equal to the second bandwidth. This section of WILLIAMS, however, does not disclose or suggest "converting each of the bandwidth allocation requests into a mini-slot size based on a modulation and symbol rate associated with the bandwidth allocation requests" and "scheduling transmission on a physical upstream channel from cable modems associated with each of the bandwidth allocation requests based on a respective mini-slot size," as recited in amended claim 11.

Paragraph [0009] of WILLIAMS discloses:

[0009] The present invention may further comprise a method of transferring data over a cable network comprising: receiving a plurality of data transfer requests from a plurality of modems, assessing bandwidth available for data transfers, allocating a first sub-channel and a plurality of first timeslots to a first modem in response to the amount of bandwidth requested, and allocating a second sub-channel and a plurality of second timeslots to a second modem in response to the amount of bandwidth requested by the second modem wherein the first sub-channel and the second sub-channel are within a single cable system upstream channel and the first and second sub-channels are of different bandwidth, and at least one of the first plurality of timeslots coincides with at least one of the second plurality of timeslots.

This section of WILLIAMS, thus, discloses the allocation of a first sub-channel and multiple first timeslots to a first cable modem and the allocation of a second sub-channel and multiple second timeslots to a second cable modem, where the first and second sub-channels are

within a single upstream channel and are of different bandwidth. This section of WILLIAMS, however, does not disclose or suggest "converting each of the bandwidth allocation requests into a mini-slot size based on a modulation and symbol rate associated with the bandwidth allocation requests" and "scheduling transmission on a physical upstream channel from cable modems associated with each of the bandwidth allocation requests based on a respective mini-slot size," as recited in amended claim 11.

Lines 3-10 of paragraph [0038] of WILLIAMS disclose:

> At step 802, a CMTS receives a plurality of data transfer requests from a plurality of modems attached to a cable network. These may be viewed as a stream of requests that may occur during contention timeslots, at which time other modems attached to the system may also request upstream data transfer bandwidth, or may occur as part of another transfer. The bandwidth request may typically include a request for an amount of bandwidth desired and may be expressed as a number of timeslots.

This section of WILLIAMS, thus, discloses the request of upstream bandwidth by cable modems, where the request includes an amount of bandwidth desired. This section of WILLIAMS, however, does not disclose, or even suggest, "converting each of the bandwidth allocation requests into a mini-slot size based on a modulation and symbol rate associated with the bandwidth allocation requests" and "scheduling transmission on a physical upstream channel from cable modems associated with each of the bandwidth allocation requests based on a respective mini-slot size," as recited in amended claim 11.

Since WILLIAMS does not disclose or suggest the combination of features recited in amended claim 11, Applicant respectfully requests withdrawal of the rejection of claim 11 under 35 U.S.C. § 102.

In paragraph 8, the Office Action rejects claims 10, 18, 28 and 36 35 U.S.C. § 103(a) as allegedly being unpatentable over WILLIAMS in view of RUSZCZYK. These claims have been canceled by the present amendment, therefore, the rejection of these claims is moot.

New claims 37 and 38 depend from claim 11. These claims patentably distinguish over WILLIAMS for at least the reasons set forth above with respect to claim 11.

New claims 39-52 recite "grouping cable modems into a plurality of groups" and "assigning a different virtual upstream channel to each of the plurality of groups, wherein each virtual upstream channel is associated with a different modulation, symbol rate or preamble." Applicant submits that WILLIAMS and RUSZCZYK, either singly or in any reasonable combination, do not disclose or suggest this combination of features. Applicant, therefore, respectfully submits that new claims 39-52 patentably distinguish over the cited references.

In view of the foregoing amendments and remarks, Applicant respectfully requests the Examiner's reconsideration of this application, and the timely allowance of the pending claims. If any questions remain, the Examiner is invited to contact the undersigned at the telephone number listed below.

To the extent necessary, a petition for an extension of time under 37 CFR § 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account No. 50-1070 and please credit any excess fees to such deposit account.

Respectfully submitted,

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